
APPENDIX A
Responsiveness Summary

RESPONSIVENESS SUMMARY

Overview

Operable Unit 2-12, Perched Water System, is the second operable unit to be addressed within Waste Area Group (WAG) 2, Test Reactor Area at the Idaho National Engineering Laboratory (INEL). A Proposed Plan was released June 26, 1992, with a public comment period from July 6 to August 5, 1992. The Proposed Plan recommended that no remedial action of the Perched Water System was necessary. This responsiveness summary provides a summarization of comments received during the comment period and responses to the summarized comments.

Background on Community Involvement

To announce the beginning of the Perched Water investigation project, public informational meetings were held in late June 1991 in Idaho Falls, Pocatello, Twin Falls, Boise, and Moscow. The meetings were to explain how the Comprehensive Environmental Resource, Compensation, and Liability Act (CERCLA) process works and to introduce the Perched Water System site investigation project to the public. These informational meetings were announced via the *INEL Reporter* newsletter, which is distributed to the INEL employees as well as the general public; through newspaper and radio advertisements; and an INEL press release. Personal phone calls were made to key individuals, environmental groups, and organizations by the INEL field offices in Pocatello, Twin Falls, and Boise. The Community Relations Plan Coordinator also made calls to community leaders in Idaho Falls and Moscow.

When the investigation was complete, a Notice of Availability for the Proposed Plan for the remedial action of the Perched Water System was published June 26, 1992 in the *Post Register* (Idaho Falls), *Idaho State Journal* (Pocatello), *Times News* (Twin Falls), *Idaho Statesman* (Boise), and *Daily News* (Moscow/Pullman). A similar newspaper advertisement appeared in the same newspapers the following week repeating the public meeting locations and times. Personal phone calls, as noted above, were also made to inform interested individuals and groups about the opportunity to comment.

The Proposed Plan for the remedial action of the Perched Water System was mailed June 26, 1992, to 6,500 individuals on the INEL mailing list. It included a cover letter from the Director of the Environmental Restoration Division of the U.S. Department of Energy (DOE) Idaho Field Office urging citizens to comment on the Proposed Plan and to attend public meetings. Copies of the Proposed Plan and the entire Administrative Record are available to the public in six regional INEL information repositories: the INEL Technical Library in Idaho Falls; and city libraries in Idaho Falls, Pocatello, Twin Falls, Boise, and Moscow. The original documents comprising the Administrative Record are located at the INEL Technical Library; copies from the originals are present in the five other libraries. These copies were placed in the information repository sections or at the reference desk in each of these libraries.

The public comment period on the Proposed Plan for the Perched Water System was held from July 6 to August 5, 1992. No requests for extensions were made. Technical briefings were conducted via speaker phone to interested members of the public in Twin Falls, Moscow, and Pocatello on July 13, 14, and 15, 1992, respectively. Public meetings were held July 20, 21, 22, and 23, 1992 in Idaho Falls, Burley, Boise, and Moscow, respectively. At these meetings, representatives from DOE, the Environmental Protection Agency (EPA), and the State of Idaho Department of Health and Welfare discussed the project, answered questions, and received public comments. Verbatim transcripts of each public meeting were prepared by a court reporter.

A Responsiveness Summary has been prepared as part of the Record of Decision. All verbal comments, as

given at the public meetings, and all written comments, as submitted, are repeated verbatim in the Administrative Record for the Record of Decision. Those comments are annotated to indicate which response in the Responsiveness Summary addresses each comment. It should be noted that the Responsiveness Summary groups similar comments together, summarizes them, and provides a single response for each comment group. This Record of Decision presents the selected no action alternative for the Perched Water System operable unit at the INEL, selected in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision for this operable unit is based on the information in the Administrative Record.

Summary of Comments Received During Public Comment Period

Comments and questions raised during the Perched Water System public comment period on the Proposed Plan are summarized briefly below. The comment period was held from July 6 to August 5, 1992. Many of the questions were answered at the public meeting as reflected in the transcripts in the Administrative Record file. Comments and questions on a variety of subjects not specific to the Perched Water System Proposed Plan were recorded. Those subjects included nuclear materials production, diversion of cleanup funds, and the need for the EPA to establish MCLs for several radionuclides, metals, and anions. Responses to those comments are not included in this Responsiveness Summary. Additional information on these unrelated topics can be obtained from the INEL Public Affairs Office in Idaho Falls or at the local INEL offices in Pocatello, Twin Falls, and Boise. Comments and questions regarding community participation in general were referred to the INEL Community Relations Coordinator and will be addressed during updates to the Community Relations Plan. Questions on the Perched Water System submitted during the formal comment period, including those provided during the public meetings, are categorized below.

Remedial Investigation

- 1. Comment:** Commenters question DOE's characterization of the size of the contaminated perched water zone. As noted in a comment on the Remedial Investigation Report from IDHW, the wells along the northeast margin of the Perched Water System are too deep to adequately represent water levels. (W1-4, W8-2, T2-4)

Response: This issue was identified in IDHW's January 1992 comments on the Remedial Investigation Report. The concern was resolved as follows: The size of the deep perched zone is estimated from water-level measurements in deep perched zone wells. These wells measure the thickness of the deep Perched Water System above the 150-foot interbed (150 feet below land surface) upon which the water is perched. It is true that the deep perched water could extend farther to the northeast than is illustrated in the figures in the Remedial Investigation Report. Although the lateral extent of the deep perched zone to the northeast is not fully constrained by dry perched wells which would indicate the extent of perched water, water levels in wells such as PW-7, USGS-72, USGS-74, USGS-66, and USGS-71, indicate that the perched water zone tapers laterally, allowing a reasonable approximation of the edge and, therefore, the size of the perched zone. Model results are based on a perched water body with no confining boundary conditions, thus simulating a more laterally extensive system (worst-case) than is observed. Therefore, defining the exact edge of the entire Perched Water System is not crucial for modeling the system.

- 2. Comment:** Commenters state that no evidence is presented to show there is no interaction between percolating water from the Big Lost River when it flows near the Test Reactor Area, and the deep perched water from the wastewater ponds at the Test Reactor Area. (W5-4, W5-5, W5-6)

Response: Section 3.5.3 of the Remedial Investigation Report discusses the influence of the Big Lost River on the Perched Water System. The evaluation accounts for flow in the Big Lost River in conjunction

with wastewater discharges to the Test Reactor Area ponds. Flow in the Big Lost River has at times created a perched water body near the Test Reactor Area that influenced the deep Perched Water System. The water from Big Lost River recharge appeared to have a short term "damming" effect on movement of water from the Perched Water System beneath the Test Reactor Area as discussed in Section 3.5.3.1 of the Remedial Investigation Report. However, contaminant concentrations were not significantly affected. The model did not include interaction between the Big Lost River and the Perched Water System beneath the Test Reactor Area because historic observations do not indicate a consistent or significant pattern of interaction. The three-year review will evaluate this assumption and others upon which this decision is based to ensure that the assumptions remain valid and that health and the environment are being protected.

3. **Comment:** Commenters state that the possibility of floods and earthquakes should not be ignored. The Test Reactor Area appears to be in the flood plain of the Big Lost River. (T4-10, W5-2, W5-4)

Response: The possible effects to the Perched Water System from the occurrence of a catastrophic event (e.g., an earthquake or volcanic activity) were addressed in a qualitative sense to understand the potential effect of such events on the Perched Water System. Big Lost River flooding was addressed in Section 3.5 of the Remedial Investigation Report. The results of the evaluation indicate that because of the long recurrence intervals between these events and the predicted dissipation of the Perched Water System (i.e., 7 years after wastewater discharge ceases) these events would have minimal impact on the Perched Water System.

Contaminants

4. **Comment:** Commenters state that the use of mean contaminant concentrations in risk assessment is inappropriate because it understates risk. The risk assessment should be repeated based on a model that considers the highest contaminant concentrations. (T4-2, T4-7, T4-20, W1-7, W6-2, W7-3, W8-4)

Response: Table 1 of the Proposed Plan included mean concentrations from the shallow and deep perched zones and the Snake River Plain Aquifer in order to provide a summary of the levels of contamination found during the investigation. The table was not intended to represent the exposure values used in the risk assessment. The exposure assessment was based on exposure concentrations predicted by the groundwater model. The intent of the modeling effort was to provide a mathematical representation of the movement of water and contaminants in the Perched Water System and was based on all available data. Once the model was found to adequately represent the system, it was used to predict future contaminant concentrations which would reach the Snake River Plain Aquifer. The model attempted to evaluate the upper-bound of the exposure concentrations by evaluating contaminant concentrations in the upper part of the aquifer before any dilution effects could occur. The risk assessment calculations were based on output concentrations from the model. The future scenario risk calculations were based on the modeled concentrations for the contaminants of concern at the year 2115. These concentrations are listed in Table 6. The concentrations were then assumed to remain constant throughout the 30-year exposure period ending in 2145. For the near-term calculations, the average modeled concentrations for each of the five near-term thirty-year periods were used for tritium, chromium, and cadmium. These concentrations are listed in Table 9.

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5. **Comment:** Commenters raise concerns about data presented in Table 1 (page A-7) of the Proposed Plan. Some commenters feel drinking water standards for several radionuclides should have been provided. (T1-15, T2-6, W1-8, W8-5)

Response: Table 1 of the Proposed Plan identifies the drinking water standard for beta and gamma emitting radionuclides at 4 millirem/year. It is acknowledged that the levels of radionuclides in the shallow perched zone exceed drinking water standards. With respect to identifying specific radionuclide standards in the Proposed Plan, the National Primary Drinking Water Regulations (40 Code of Federal Regulations 141) state that "if two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 millirem/year...". The exposure should be calculated as a summation of the activities contributed by all radionuclides present (cesium-137, americium-241, cobalt-60, etc.). In preparation of the Proposed Plan, it was felt that it would be confusing to readers to list calculated standards based on the 4 millirem limit for each radionuclide, that it would be a misrepresentation of the standard, and that risk would be understated. We will attempt to state standards more clearly in the future.

- 5A. **Comment:** One commenter expresses interest in the contaminant concentrations shown in Table 1, Columns B and C, of the Proposed Plan. These data show that tritium and chromium concentrations are lower in the deep perched water than in the Snake River Plain Aquifer. This is contrary to what would be expected (i.e., concentrations decreasing with depth). (W2-2)

Response: The reason for tritium and chromium concentrations being higher in the Snake River Plain Aquifer than in the Deep Perched Water is not known for certain. However, a likely contributing factor is the influence of infiltration of water from the cold waste pond having a more pronounced diluting effect on the deep perched water than on the Snake River Plain Aquifer water below. Recognition that certain details of the Perched Water System are not understood fully is the reason that monitoring of the system and the 3-year review will be conducted.

6. **Comment:** Commenters state that the information provided to the public in the Proposed Plan, provides an incomplete picture of contamination in the Perched Water System. Commenters note levels of contamination discharged to the Perched Water System and detected in the shallow perched system. A commenter also feels that the fact that production wells which provide drinking water to Test Reactor Area employees are not contaminated should be stated. (T1-13, T4-14, W1-4A, W1-7)

Response: The Proposed Plan was intended to be a brief summary of information supporting key conclusions on which the proposal was based. Detailed information is in the Remedial Investigation Report, available to the public in the Administrative Record and the Information Repositories. We recognize that significant concentrations of radionuclides have been released to the Perched Water System. Section 4 of the Remedial Investigation Report contains a complete description of the sources of wastewater disposal and waste disposal history to the Perched Water System. Section 4 of the report also includes observed contaminant concentrations in the shallow and deep perched water zones and the Snake River Plain Aquifer. It is also acknowledged that production wells at the Test Reactor Area, which are the source of drinking water to Test Reactor Area workers, are not contaminated and that there is currently no risk to workers due to their use of the wells. Data from the production wells was used as background to which other contaminant levels were compared for screening purposes. The Remedial Investigation Report was available prior to the public meeting for review in the Administrative Record for the Perched Water System at the information repositories listed in the introductory section to the Responsiveness Summary.

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7. **Comment:** Commenters state that contaminant transfer time within the Snake River Plain Aquifer is uncertain because the Snake River Plain is composed of highly permeable bedrock and sediments. Persistent pollutants produced at the INEL will eventually appear in the off-site environment. (T2-7, W1-10, W1-13, W1-19, W5-1B, W8-6, W8-8)

Response: We understand that the Perched Water System and the Snake River Plain Aquifer beneath the Test Reactor Area occur in permeable and heterogeneous rock and sediments. However, the Perched Water System and the aquifer have been monitored for 40 years and considerable information has been developed regarding movement of water and contaminants in the subsurface in the vicinity of the Test Reactor Area. The groundwater computer model which was developed for the investigation was based on and compared or calibrated to this historical information to ensure that an adequate representation of the system's past behavior was possible before the model was used to estimate its future behavior. Therefore, even though the subsurface rock and sediments are heterogeneous and permeable, the system can be represented adequately to make reasonable estimates of its future behavior.

We also agree that Snake River Plain Aquifer water beneath the Test Reactor Area will eventually flow off-site. However, the purpose of the remedial investigation was to assess the risk resulting from the Perched Water System's effect on the Snake River Plain Aquifer directly beneath the Test Reactor Area before any dilution would occur as the water moved away from the Test Reactor Area or to greater depths in the aquifer. This approach was to provide a reasonable estimate of the maximum risk which would result due to infiltration of the contaminated perched water to the aquifer by calculating the exposure to a potential future resident who would draw water from the upper part of the aquifer directly beneath the perched water.

Future remedial investigations including the Test Reactor Area comprehensive investigation and the final INEL and Snake River Plain Aquifer investigations will further address the subject of movement of contaminants in the aquifer both within INEL boundaries and off-site.

8. **Comment:** One commenter questions whether the model reflects groundwater movement and is able to adequately predict future contaminant concentrations. The model should be independently verified. (W5-7)

Response: We recognize that a mathematical computer model can not exactly represent the Perched Water System. However, the groundwater model was calibrated with historic data for tritium and chromium to ensure that it represented the Perched Water System, as noted in the response to comment #7. The conditions under which this "match" was achieved were then applied for the future projections. Groundwater monitoring will be conducted to verify that contaminant concentration trends follow those predicted by a groundwater computer model as noted in Section 7 of the Record of Decision.

The application of the computer fate and transport groundwater model for the Perched Water System Remedial Investigation including the input parameters and the model output are described in Section 5 of the Remedial Investigation Report. This information was available for technical reviewers to use in developing their own models as independent verification of the model results. The presentation of the model results have been subject to technical reviews by individuals independent of the Perched Water System Remedial Investigation, including the EPA and the State of Idaho.

9. **Comment:** One commenter believes that leaching and pollutant concentration values generated by the model for the 125-year period are used for the rest of the planning effort as though they are hard, real, measured data. The commenter believes that these data are highly speculative and unreliable and deserve to be treated with great reserve. The commenter believes the modeled data should be used with variances or confidence intervals and have statistical reliability attached. (W5-8)

Response: The use of confidence intervals to quantify uncertainty of the model was not applied because it was not felt that the information gained by a quantitative uncertainty analysis would justify the time and resources required. One reason is the existence of a wealth of historical information available for model calibration which helped constrain model input parameters in order to adequately represent the system. Post Record of Decision monitoring will also serve to verify the model results and the conclusions based upon the model. However, Table 5-5 in Section 5 of the Remedial Investigation Report provides the model assumptions and the uncertainty factors that could potentially impact the results. Health protective assumptions and input parameters were selected to ensure that the model did not underestimate exposure concentrations. A purpose of the Post-Record of Decision monitoring is to evaluate the adequacy of the model predictions (see Section 7 of this Record of Decision).

10. **Comment:** One commenter states that the Proposed Plan indicates that tritium concentrations will decrease due to natural radioactive decay but does not mention dilution as a factor in what is taking place. (T1-14)

Response: The Perched Water System remedial investigation focused on contaminant migration from the Perched Water System to the Snake River Plain Aquifer. Although dilution of tritium and chromium in the Snake River Plain Aquifer is likely taking place, the model and the risk assessment performed with the modeled concentrations did not account for dilution effects in the Snake River Plain Aquifer downgradient from the Test Reactor Area to ensure the most conservative case was evaluated and that risk would not be underestimated.

Risk Assessment

12. **Comment:** One commenter states that risk decisions should be based on one chance in one million rather than the one chance in ten thousand to one chance in one million range. (W1-17, W8-9A)

Response: The one in ten thousand to one in one million risk range was established in the NCP as the range within which risk is considered to be acceptable for assessment of risk conducted under CERCLA.

Scenarios

13. **Comment:** Commenters ask if a plan exists for groundwater monitoring at the Test Reactor Area 125 years from now. (T1-1, W4-1)

Response: The need for monitoring 125 years in the future has not been established. In fact, risk due to contaminants in the Perched Water System is expected to be within acceptable levels within the next 20 years. Criteria and duration for future monitoring will be developed as near-term monitoring results are evaluated. This plan is described briefly in Section 7. The purposes of Post-Record of Decision monitoring are to: (1) evaluate how contaminant of concern concentration trends in the Snake River Plain Aquifer compare to those predicted by computer modeling; and (2) evaluate the effect of discontinued discharge to the warm waste pond on fate of contaminants in the Perched Water System and impact on the Snake River Plain Aquifer.

14. **Comment:** Commenters state that institutional control by the DOE for 125 years is questionable and it should not be assumed for planning purposes that DOE will be in control at INEL in 125 years. Another commenter suggested that the INEL's designation as a National Environmental Research Park may ensure government control for 125 years or more. (T1-2, T1-7, T1-9, T1-11, T2-8, W4-2, W8-7)

Response: The 125 year future resident-farmer scenario was assessed as one likely timeframe for establishment of residents at the Test Reactor Area. This timeframe was selected based on 10 CFR 61 providing for 100 years of institutional controls for low level waste disposal areas after operations have ceased. Even though the INEL has been designated as a National Environmental Research Park, there is still uncertainty of future land use and continuation of operations at the Test Reactor Area many years into the future. Thus, five near-term risk scenarios were also evaluated assuming that residence would be established immediately. The results of the near-term scenario evaluations concluded that contaminant concentrations would be within the acceptable risk range during the 30 year scenario beginning in the year 2000. In addition, the concentration of chromium and tritium will be below the MCLs by the year 2020. This information suggests that even though long-term land use at the INEL is not certain, it is reasonable that the INEL will remain in government control beyond when contaminant concentrations associated with the Test Reactor Area Perched Water system fall to within acceptable levels.

15. **Comment:** Commenters state that DOE's contention that there is no current use of the perched aquifer water near the Test Reactor Area is unacceptable; some drinking water wells (at the Idaho Chemical Processing Plant and Central Facilities Area) are 2 to 3 miles downgradient. (T2-8, W1-11, W1-12, W8-6, W8-7)

Response: We recognize that drinking water wells are located at the Central Facilities Area and at the Idaho Chemical Processing Plant. The statement in the Proposed Plan referred to the fact that there are no wells which currently draw water directly from the Test Reactor Area Perched Water System or the Snake River Plain Aquifer directly beneath for other than monitoring purposes. The wells which produce water from the Snake River Plain Aquifer at the Test Reactor Area are upgradient from the contamination and are regularly monitored to ensure that they are not contaminated. The scope of this investigation did not include an evaluation of the migration of contaminants in the Snake River Plain Aquifer down gradient of the Test Reactor Area, the Final INEL/Snake River Plain Aquifer RI/FS will address aquifer risks from the broader perspective of the INEL as a whole. It should also be noted that all drinking water wells at the INEL are routinely monitored to ensure the water does not exceed MCLs.

Contaminant Screening

16. **Comment:** Commenters questioned the appropriateness of eliminating radioactive isotopes with half-lives of greater than 5 years from the risk assessment, such as Cs-137, Iodine-129, and Plutonium -238, -239, and -240 which have long half-lives and have been detected in the sediments of the Warm Waste Pond. (T2-5, W1-6, W1-9, W8-3, W8-5A)

Response: The Proposed Plan included only those contaminants which were retained after the screening process and were carried through the entire risk assessment process. The Proposed Plan is intended to be a summary of the highlights and findings of the risk assessment. Plutonium-239 and -240 were not carried through the risk assessment because they were not detected in either the shallow or deep perched water. It should be noted that resolution between Plutonium 239 and Plutonium-240 using alpha spectroscopy is not possible because the alpha energies which are measured are very similar. The two isotopes are generally measured together and reported as Plutonium-239, thus the Plutonium-239 value accounts for both isotopes. Plutonium-238 was detected in the shallow perched water but was eliminated from the risk assessment because it contributed to less than 1 percent of the overall risk. Cesium-137 was carried through the entire risk assessment as a contaminant of concern. Iodine-129 was not analyzed for in the remedial investigation because it was not considered to be a potential contaminant of concern given the small amount of Iodine-129 released to the pond (only 140×10^{-9} curies for the period between 1961 and 1985).

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- 16A. Comment:** One commenter is concerned that screening out contaminants based on their small individual contribution to risk, as was done to develop the list of contaminants of concern presented in the Proposed Plan, may cause significant underestimation of the overall risk if these contaminants were evaluated on a cumulative basis prior to screening. (T4-12)

Response: The risk assessment guidance developed by EPA suggests that this type of screening be done in the risk assessment to limit the number of contaminants which are carried through the entire assessment. It is true that contaminants should not be excluded from the risk assessment if they contribute significantly to overall risk, even if only on a cumulative basis. The Remedial Investigation Report describes the process which was followed to develop the list of contaminants which were carried through the entire risk assessment process. The Proposed Plan is only a summary of the highlights and conclusions of the Remedial Investigation Report. In this case, the contaminants which were carried through the assessment contribute to over 98 percent of the total carcinogenic and noncarcinogenic risk.

Ecological Risk Assessment

- 17. Comment:** One commenter states that research on native plants at the Test Reactor Area indicates some have root systems 10 to 20 feet down into contaminated subsurface soil. (T4-9)

Response: There are currently no known plants in the vicinity of the Test Reactor Area which have root systems that could reach the contaminated perched water. The shallow perched water only occurs directly beneath the ponds and will cease to exist once discharge to the ponds is discontinued before deep-rooted plants would have time to develop.

- 17A. Comment:** One commenter expresses concern that research on INEL flora and fauna is incomplete, yet DOE presumes to set "safe concentrations" for all plant and animal populations. (T4-21, W7-4)

Response: We recognize that there are gaps in the available toxicity data for plants and animals which resulted in the ecological assessment being qualitative rather than quantitative in nature. The intent of the risk assessment was not to attempt to set safe concentrations for all plant and animal populations at the INEL. The assessment was to determine if the levels of contaminants of concern which are predicted to be in the Snake River Plain Aquifer would cause adverse effects to major species or communities. Given the information available regarding the levels of these contaminants which are harmful to plants and animals, the projected concentrations of contaminants of concern are not expected to result in unacceptable risk. Ecological risk will be addressed for Test Reactor Area as a whole during the comprehensive WAG 2 investigation and for the INEL as a whole in the final WAG 10 investigation.

Alternatives

- 18. Comment:** Commenters object to DOE's continued use of the warm and cold waste ponds in light of the decision to allow the contaminants to remain in the perched zones. (W1-5, W1-20, W5-9, W6-4, T2-1, T2-2, T4-4, T4-6, T4-11)

Response: The CERCLA process under which the Perched Water remedial investigation and risk assessment were conducted concludes that action is not necessary to reduce risks at the site. The warm waste water was identified as a source of contamination to groundwater. Construction of a new lined replacement pond is underway and is anticipated to be complete in 1993. While the cold waste pond is expected to remain in use until at least the year 2007, the effluent discharged to this pond does not

contribute to contamination in the Perched Water System. Infiltration of cold waste effluent into the Perched Water System was included in the model that generated contaminant exposure concentrations used in the human health risk assessment (see Remedial Investigation Report Section 6). The risk assessment indicates that no unacceptable adverse impacts to human health or the environment occur as a result of continued use of the cold waste pond. As noted in responses to previous comments, monitoring of the Perched Water System will be conducted to ensure that these modeling assumptions are correct.

19. **Comment:** One commenter asks if other options were considered and if so, what were they? What were their costs? What was the decisive factor in their being rejected? Were any new and innovative solutions considered? (T4-23)

Response: Two remedial action objectives were identified at the onset of the Remedial Investigation. The first remedial action objective was to prevent risks to human health that would result from residential/agricultural use of Snake River Plain Aquifer water containing contaminants of concern in excess of maximum contaminant levels, or that would constitute human carcinogenic risk in excess of the NCP target risk range (10^{-6} to 10^{-4}) or a noncarcinogenic hazard index of greater than 1.0. The human health risk assessment indicates that this remedial action objective will be achieved if no action is taken. The second remedial action objective was to prevent human ingestion, inhalation or direct contact with contaminated shallow or deep perched groundwater. This remedial action objective will be met because existing institutional controls at the Test Reactor Area and INEL will likely remain in place at least through the time it takes for contaminant levels in the Snake River Plain Aquifer to decrease to an acceptable level. The investigative process under CERCLA and the NCP generally consists of the remedial investigation which evaluates the nature and extent of contamination and the risk to human health and the environment resulting from that contamination followed by a feasibility study which evaluates various cleanup technologies to determine the best method for reducing the risk to within acceptable levels and achieve the cleanup or remedial action objectives. In the case of the Perched Water System, it was determined that no action was necessary to reach the remedial action objectives stated above. Therefore, additional resources were not expended to complete an analysis of a variety of other cleanup methods.

20. **Comment:** Several commenters state that other alternatives should be evaluated such as: pump polluted water out of the perched water table, treat/purify the water, and store it in a safe, monitored environment; recycle noncontaminated wastewater; stop use of all leach ponds and pump contaminated water to a treatment system; try the Ultrasound Water Reclamation method. Additionally, pump liquid adsorbents into the perched water table to remove more pollutants; monitor the perched water table areas; and cap the entire area above the Perched Water System to prevent infiltration and direct run off to the Big Lost River channel. (T2-10, T3-2, T4-16, T4-17, W1-15, W1-18, W1-19, W1-20, W3-2, W5-9, W8-11)

Response: We agree that cleanup technologies could be implemented to remove some of the contamination from the Perched Water System at Test Reactor Area. However, the purpose of implementing such technologies under the Superfund program would be reduce unacceptable risk to human health and the environment. Based on the risk assessment and risk management considerations and conclusions as presented in Sections 6 and 7 of the Remedial Investigation Report, the risk to human health and the environment was found to be within the acceptable limits. Therefore, evaluation of other alternatives was not pursued further.

Agree
(commenter agrees with the alternative selected)

21. **Comment:** Several commenters agree that the “no action” alternative for the Perched Water System is acceptable because contaminant concentrations are below MCLs, clean up of the Perched Water System would be a waste of money, and the alternative is realistic and logical. This type of extensive evaluation should not be necessary in the future for similar levels of contamination. (T1-3, T1-5, T1-6, T1-10, T3-1, 1-12, W2-1, W2-3, W3-1, W5-1)

Response: DOE, EPA, and IDHW agree that no action is necessary based upon the risk assessment which shows that no unacceptable risk exists and that monitoring will ensure that predicted contaminant trends in the Snake River Plain Aquifer are verified.

This evaluation will provide insight when similar types and levels of contamination are investigated in the future. However, it cannot be concluded that no evaluation will be necessary. Each site will be evaluated on its own merits and on its associated contaminants and exposure pathways.

Disagree
(commenter disagreed with alternative selected)

22. **Comment:** Several commenters disagree with the “no action” proposal and stated that DOE should be required to clean up the contamination in the Perched Water System because the contaminants will continue to migrate into the subsurface and risk levels will rise. (T1-4, T2-9, T4-1, T4-16, T4-18, T4-22, T4-24, T4-26, W1-1, W1-3A, W1-18, W5-3, W5-10, W6-1, W7-1, W8-10)

Response: The Agencies respect the opinion of the commenters; however, there is no information available which we believe supports changing the decision from what was presented in the Proposed Plan. The remedial investigation and risk assessment conducted for the Test Reactor Area Perched water show that contaminant levels and associated risk will continue to decrease and that no unacceptable risk is posed by the contaminated perched water. Elimination of the warm waste pond in 1993 will also go along way to improve the situation. Monitoring will be conducted to ensure the Perched Water System continues to behave as expected. Investigations and remedial actions at the INEL, including the Perched Water Remedial Investigation, are conducted in accordance with CERCLA, its implementing regulation the NCP, and the INEL Federal Facility Agreement and Consent Order and associated EPA guidance. The Federal Facility Agreement and Consent Order also provides for EPA and State of Idaho review of all activities. This review is to ensure that decisions are made with sound technical basis.

Public Involvement

23. **Comment:** Details of the monitoring plan were requested during the technical briefings held via speaker phone prior to the public meetings and during the public meeting in Idaho Falls. The commenters request to see the monitoring plan before publication of the Record of Decision. (T1-1, T1-8, W4-1)

Response: The purpose of the Proposed Plan was to present the agencies recommendation to the public for comment. The recommended alternative presented in the Proposed Plan was for no remedial action with monitoring of the Perched Water System. Details for a monitoring plan would have been premature in the Proposed Plan. At the time the plan was released the “no remedial action” with monitoring decision had not been finalized. At the public meeting in Idaho Falls, general components of the monitoring plan were discussed during the agencies’ presentation of the Proposed Plan. Subsequent presentations during

the public meeting period were modified to include discussion and visual aids to describe the components that were being considered for the development of the monitoring plan. Section 7 of this Record of Decision documents that DOE will submit a draft monitoring plan to the Agencies for review within 45 days of the finalization of the Record of Decision. Once finalized, the monitoring plan will be available in the information repositories. As noted in Section 7, monitoring data will be made available in the information repositories.

24. **Comment:** One commenter requests that DOE publish the public comments made at the original scoping meeting on this project. (T1-16)

Response: The comments made at the original scoping meetings are summarized in the Scoping Report and have been made available at the information repositories listed in the introductory sections to the Responsiveness Summary.

Fragmentation

25. **Comment:** Commenters state that public recognition of potential pollution problems at the INEL may be diminished by focusing on only a few of the 49 waste management units at the Test Reactor Area. Relationships among facilities and Operable Units should be spelled out in detail. A segmented approach frustrates a comprehensive assessment of the collective contamination and the cumulative effects being released by all waste sites. The final WAG 10 INEL-wide assessment should begin now, especially the assessment of contamination in the Snake River Plain Aquifer, rather than wait until 1998. (T2-3, T4-3, T4-5, T4-8, T4-11, T4-13, T4-15, T4-19, T4-24, T4-25, T4-32, W1-2, W1-3, W1-14, W5-1A, W6-3, W6-10, W7-2, W8-1)

Response: The approach implemented in the INEL Federal Facility Agreement and Consent Order, including the concept of addressing the numerous sites at the INEL in operable units, is consistent with the NCP. One of the stated purposes of the NCP (300.3 b) is to provide for efficient, coordinated, and effective response to release of hazardous substances. Section 300.430 of the NCP states that complex sites should generally be addressed in operable units when early actions are necessary or appropriate to achieve significant risk reduction quickly, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of the total site cleanup. It is acknowledged that cumulative risks are generally not being evaluated at this time, early into the implementation of the agreement. This is because of the complexity of the INEL and the numerous sites that must be investigated. The agencies recognized that cumulative assessments should be done and scheduled comprehensive investigations on both the individual WAG and the INEL-wide level. However, the agencies acknowledged that cumulative risks could not be evaluated until adequate information concerning each individual site is collected. The FFA/CO Action Plan includes the schedules for addressing each of the operable units. This approach has been presented to the public for review and comment during the comment period on the agreement before it was signed by the three agencies.

26. **Comment:** Commenters state that the cumulative consequences of contamination of each subsequent no-action alternative should be included in the Proposed Plans for each operable unit. This would allow the public to comprehend and track the cumulative risk of the clean-up program as it progresses, thereby allowing the earliest detection of unacceptable risk. (T4-25, W1-14, W5-10, W6-9, W6-10)

Response: It may be possible for several sites which do not pose an unacceptable risk on their own to pose an unacceptable risk if evaluated on a cumulative basis. However, it would depend upon the percentage of exposure from each site, the toxicological effects of the various contaminants at the various

sites and the exposure pathways at each site. For example, it would not be reasonable to assume that a resident obtains the majority of his drinking water from two different wells at two different locations at the same time. Overall evaluations will be conducted at two different times at the INEL. First, each WAG will have a final comprehensive risk assessment performed after all of the individual sites have been investigated and the necessary information is available to do the overall evaluation. Second, a final INEL evaluation will be done after the individual WAG evaluations are completed. The comprehensive INEL Remedial Investigation/Feasibility Study will summarize risks to human health and the environment for the INEL. Data collection and risk analysis performed at the individual Operable units and WAGs will be used in the WAG 10 comprehensive Remedial Investigation/Feasibility Study to characterize the total risk posed by the INEL to human health and the environment. Additional information concerning related Operable units is in Section 4 of the Record of Decision.

REFERENCES

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- EPA, 1989a, *Risk Assessment Guidance for Superfund. Human Health Evaluation Manual Part A. Interim Final*, OSWER Directive 9285.701A, December 1989.
- EPA, 1989b, *Risk Assessment Guidance for Superfund, Volume II - Environmental Evaluation Manual*, EPA/540/1-89/001, December 1989.
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APPENDIX B

Public Comment/Response List

Name	Category	Comment#	Page
Gary Adamson	P-22	W3-2	403
Gary Adamson	P-23	W3-1	403
Beatrice Brailsford	P-14	T1-7	73
Beatrice Brailsford	P-14	T1-7	74
Beatrice Brailsford	P-14	T1-9	76
Beatrice Brailsford	P-25	T1-8	74
Beatrice Brailsford	P-25	T1-8	75
Beatrice Brailsford	P-25	T1-8	76
Chuck Broschious	P-01	W1-5	388
Chuck Broschious	P-01	W1-5	389
Chuck Broschious	P-04	W1-9	392
Chuck Broschious	P-05	W1-10	392
Chuck Broschious	P-07	T4-14	318
Chuck Broschious	P-07	T4-14	319
Chuck Broschious	P-07	W1-6	389
Chuck Broschious	P-07	W1-9	392
Chuck Broschious	P-08	W1-12	392
Chuck Broschious	P-08	W1-15	392
Chuck Broschious	P-08	W1-20	395
Chuck Broschious	P-12	W1-18	393
Chuck Broschious	P-15	W1-13	392
Chuck Broschious	P-15	W1-14	392
Chuck Broschious	P-16	W1-8	391
Chuck Broschious	P-16	W1-8	392
Chuck Broschious	P-16	W1-11	392
Chuck Broschious	P-20	W1-7	391
Chuck Broschious	P-20	W1-21	395
Chuck Broschious	P-22	T4-16	321
Chuck Broschious	P-22	T4-17	321
Chuck Broschious	P-22	T4-17	322
Chuck Broschious	P-22	W1-17	392
Chuck Broschious	P-22	W1-17	393
Chuck Broschious	P-22	W1-19	394
Chuck Broschious	P-22	W1-20	395
Chuck Broschious	P-22	W1-21	395
Chuck Broschious	P-24	T4-16	321
Chuck Broschious	P-24	W1-1	387
Chuck Broschious	P-24	W1-4	388
Chuck Broschious	P-24	W1-19	394
Chuck Broschious	P-27	T4-15	319
Chuck Broschious	P-27	W1-2	387
Chuck Broschious	P-27	W1-3	388
Chuck Broschious	P-27	W1-16	392
Chuck Broschious	P-28	W1-16	392
Thomas V. Dechert	P-02	W5-6	409
Thomas V. Dechert	P-02	W5-6	410
Thomas V. Dechert	P-02	W5-7	410

Name	Category	Comment#	Page
Thomas V. Dechert	P-02	W5-8	410
Thomas V. Dechert	P-02	W5-8	411
Thomas V. Dechert	P-03	W5-4	408
Thomas V. Dechert	P-03	W5-4	409
Thomas V. Dechert	P-03	W5-6	409
Thomas V. Dechert	P-03	W5-6	410
Thomas V. Dechert	P-08	W5-3	407
Thomas V. Dechert	P-08	W5-3	408
Thomas V. Dechert	P-09	W5-9	411
Thomas V. Dechert	P-09	W5-9	412
Thomas V. Dechert	P-10	W5-10	412
Thomas V. Dechert	P-10	W5-10	413
Thomas V. Dechert	P-20	W5-11	413
Thomas V. Dechert	P-20	W5-11	414
Thomas V. Dechert	P-22	W5-11	413
Thomas V. Dechert	P-22	W5-11	414
Thomas V. Dechert	P-23	W5-1	406
Thomas V. Dechert	P-24	W5-5	409
Thomas V. Dechert	P-24	W5-12	414
Thomas V. Dechert	P-24	W5-12	415
Thomas V. Dechert	P-27	W5-2	407
Thomas V. Dechert	P-28	W5-12	414
Thomas V. Dechert	P-28	W5-12	415
Dennis Donnelly	P-24	T1-4	71
Blan Holman	P-13	T1-1	67
Blan Holman	P-13	W4-1	404
Blan Holman	P-14	T1-2	68
Blan Holman	P-14	W4-2	405
Blan Holman	P-25	T1-1	67
Blan Holman	P-25	W4-1	404
Carolyn Hondo	P-01	T2-4	161
Carolyn Hondo	P-01	T2-4	162
Carolyn Hondo	P-01	W8-2	420
Carolyn Hondo	P-04	W8-4	421
Carolyn Hondo	P-05	T2-6	162
Carolyn Hondo	P-05	W8-5	421
Carolyn Hondo	P-08	T2-7	162
Carolyn Hondo	P-08	T2-7	163
Carolyn Hondo	P-08	W8-7	421
Carolyn Hondo	P-08	W8-9	421
Carolyn Hondo	P-08	W8-9	422
Carolyn Hondo	P-12	W8-10	422
Carolyn Hondo	P-14	T2-8	163
Carolyn Hondo	P-14	W8-8	421
Carolyn Hondo	P-15	T2-8	163
Carolyn Hondo	P-15	W8-7	421
Carolyn Hondo	P-15	W8-8	421

Name	Category	Comment#	Page
Carolyn Hondo	P-16	T2-5	162
Carolyn Hondo	P-16	W8-3	421
Carolyn Hondo	P-16	W8-6	421
Carolyn Hondo	P-20	T2-1	160
Carolyn Hondo	P-20	T2-2	160
Carolyn Hondo	P-20	T2-2	161
Carolyn Hondo	P-22	T2-10	164
Carolyn Hondo	P-22	W8-12	423
Carolyn Hondo	P-24	T2-9	163
Carolyn Hondo	P-24	T2-9	164
Carolyn Hondo	P-24	W8-11	423
Carolyn Hondo	P-27	T2-3	161
Carolyn Hondo	P-27	W8-1	420
John Horan	P-05	T1-15	81
John Horan	P-07	T1-13	79
John Horan	P-11	T1-14	79
John Horan	P-11	T1-14	80
John Horan	P-14	T1-11	78
John Horan	P-14	T1-11	79
John Horan	P-23	T1-10	77
John Horan	P-23	T1-10	78
John Horan	P-23	T1-12	79
John Horan	P-26	T1-16	82
Mary McReynolds	P-03	T4-10	313
Mary McReynolds	P-03	T4-10	314
Mary McReynolds	P-04	T4-7	312
Mary McReynolds	P-17	T4-12	314
Mary McReynolds	P-17	T4-12	315
Mary McReynolds	P-18	T4-9	313
Mary McReynolds	P-20	T4-6	312
Mary McReynolds	P-20	T4-11	314
Mary McReynolds	P-27	T4-5	311
Mary McReynolds	P-27	T4-8	312
Mary McReynolds	P-27	T4-8	313
Mary McReynolds	P-27	T4-11	314
Mary McReynolds	P-27	T4-13	315
Lynn Mineur	P-04	T4-2	309
Lynn Mineur	P-04	W6-2	416
Lynn Mineur	P-20	T4-4	310
Lynn Mineur	P-20	W6-4	417
Lynn Mineur	P-24	T4-1	309
Lynn Mineur	P-24	W6-1	416
Lynn Mineur	P-27	T4-3	309
Lynn Mineur	P-27	T4-3	310
Lynn Mineur	P-27	T4-27	373
Lynn Mineur	P-27	T4-27	374
Lynn Mineur	P-27	W6-3	416

Name	Category	Comment#	Page
Lynn Mineur	P-27	W6-5	417
Lynn Mineur	P-27	W6-6	417
Lynn Mineur	P-27	W6-6	418
Lynn Mineur	P-28	W6-5	417
Lynn Mineur	P-28	W6-6	417
Lynn Mineur	P-28	W6-6	418
Louise Regelin	P-21	T4-23	324
Louise Regelin	P-21	T4-23	325
Louise Regelin	P-24	T4-22	324
Louise Regelin	P-24	T4-24	325
Louise Regelin	P-24	T4-24	326
Louise Regelin	P-24	T4-26	327
Louise Regelin	P-27	T4-24	325
Louise Regelin	P-27	T4-24	326
Louise Regelin	P-27	T4-25	327
Louise Regelin	P-28	T4-25	327
Bruce Schmalz	P-06	W2-2	402
Bruce Schmalz	P-23	T1-5	71
Bruce Schmalz	P-23	T1-6	71
Bruce Schmalz	P-23	T1-6	72
Bruce Schmalz	P-23	W2-1	402
Bruce Schmalz	P-23	W2-3	402
Patricia and Donald Scott	P-04	T4-20	323
Patricia and Donald Scott	P-04	W7-3	419
Patricia and Donald Scott	P-19	T4-21	323
Patricia and Donald Scott	P-19	W7-4	419
Patricia and Donald Scott	P-24	T4-18	322
Patricia and Donald Scott	P-24	W7-1	419
Patricia and Donald Scott	P-27	T4-19	322
Patricia and Donald Scott	P-27	T4-19	323
Patricia and Donald Scott	P-27	W7-2	419
John E. Tanner	P-23	T1-3	70
John E. Tanner	P-23	T1-3	71
Michael J. Ushman	P-22	T3-2	218
Michael J. Ushman	P-23	T3-1	216

(176 rows affected)

APPENDIX C
Administrative Record Index

**IDAHO NATIONAL ENGINEERING LABORATORY
ADMINISTRATIVE RECORD FILE INDEX**

**TEST REACTOR AREA PERCHED WATER SYSTEM
REMEDIAL INVESTIGATION / FEASIBILITY STUDY OPERABLE UNIT 2-12**

FILE NUMBER

AR1.1 BACKGROUND

- Document #: EGG-ERD-10313
Title: Selection Of Groundwater Flow And Contaminant-Transport Models For The Test Reactor Area At The INEL
Author: Dames and Moore
Recipient: N/A
Date: 06/01/92

AR3.3 WORKPLAN

- Document #: 2377
Title: Scope of Work Perched Water System RI/FS
Author: Vernon, D. K.
Recipient: N/A
Date: 05/23/91
- Document #: ERD-343-91
Title: Transmittal, Working Schedule for the TRA Perched Water RI/FS
Author: DOE, Lyle, Jerry
Recipient: EPA, Pierre, W. and IDHW, Nygard, D.
Date: 09/12/91
- Document #: 3515
Title: Working Schedule for the TRA Perched Water RI/FS
Author: DOE, Lyle, Jerry
Recipient: EPA, Pierre, W. and IDHW, Nygard, D.
Date: 09/12/91

AR3.4 RI REPORTS

- Document #: EGG-WM-10002
Title: RI Report for the TRA Perched Water System OU 2-12
Author: S. M. Lewis
Recipient: N/A
Date: 06/01/92

Test Reactor Area Perched Water System Operable Unit 2-12
01/22/93

FILE NUMBER

AR5.1 RECORD OF DECISION

- Document #: 5230
Title: Record of Decision for the TRA Perched Water System
Author: INEL Community Relations
Recipient: N/A
Date: 12/10/92

AR6.1 COOPERATIVE AGREEMENTS

- Document #: ERD1-070-91*
Title: Pre-signature Implementation of the CERCLA Interagency Agreement Action Plan
Author: EPA, Findley, C. E.
Recipient: DOE, Solecki, J. E.
Date: 04/19/91
- Document #: 3205*
Title: U.S. DOE INEL Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 07/22/91
- Document #: 2919*
Title: INEL Action Plan For Implementation of the Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 07/22/91
- Document #: 1088-06-29-120*
Title: U.S. DOE INEL Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 12/04/91
- Document #: 3298*
Title: Response to Comments on the Idaho National Engineering Laboratory Federal facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 02/21/92

Test Reactor Area Perched Water System Operable Unit 2-12
01/22/93

FILE NUMBER

AR10.3 PUBLIC PARTICIPATION

- Document #: 5130
Title: Dear Citizen Pamphlet on the Proposed Plan for the Perched Water System
Author: INEL Community Relations
Recipient: N/A
Date: 06/26/92
- Document #: 5136
Title: Attention: Agencies Seek Public Comment on Three Proposed Plans
Author: INEL Community Relations
Recipient: N/A
Date: 07/01/92

AR10.4 PUBLIC MEETING TRANSCRIPTS

- Document #: 5164-TRA
Title: Public Meeting Transcripts on the Proposed Plan for the TRA Perched Water System
Author: N/A
Recipient: N/A
Date: 07/20/92

*** Document filed in INEL Federal Facility Agreement and Consent Order Administrative Record Binder**